DOCUMENT RESUME

ED 123 217 SP 010 120

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TITLE Smokers vs. Nonsmokers: Toward an Understanding of Their Differences.
INSTITUTION Louisville Univ., Ky. School of Medicine.
PUB DATE 2 Apr 76
NOTE 20p.; Paper presented at the Annual Convention of the American Alliance for Health, Physical Education, and Recreation (Milwaukee, Wisconsin, April 2, 1976)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS Anxiety; Biochemistry; *Individual Differences; *Mental Health; *Smoking; *Socioeconomic Background; Socioeconomic Influences

ABSTRACT

This research was conducted to contribute to the general knowledge concerning differences between smokers and nonsmokers. The data were obtained from a major epidemiologic study conducted in 1973 in the southeastern United States. A survey instrument composed of 403 questions and administered to 2029 randomly selected adults was designed to elicit mental and physical health information as well as sociodemographic and service utilization data. Significant differences have been found between smokers and nonsmokers. The highest percentage of smokers was found among males, those aged 30-44, the less educated, the divorced or separated, the middle socioeconomic class, those experiencing larger numbers of stressful life events, those who did not grow up with both their real parents, and those who had unhappy childhoods. Smokers as a group tended to score higher on psychological scales measuring anxiety and depressive symptomatology. The findings support that smoking is a compensatory form of behavior, a symptom of other problems of emotional health. Until it becomes possible to identify individuals who are biologically cancer-prone and to therefore direct educational efforts toward specific target groups who will suffer the most debilitating consequences of smoking, intervention must be persistent, individualized, and socially reinforced. (charts and graphs are included in the report.) (SK)

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SMOKERS VS. NONSMOKERS: TOWARD AN UNDERSTANDING OF THEIR DIFFERENCES

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A paper presented at the Health Behavior Section, American Alliance for Health, Physical Education, and Recreation Convention, Milwaukee, Wisconsin, April 2, 1976.

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SP 010 130

Introduction

As is the case with all so-called inappropriate health behaviors, the issues surrounding the practice of smoking continue to intrigue and confound casual observers and researchers, alike. The only commonsense approach to a study of tobacco use is to acknowledge beforehand the complex, multi-dimensional aspects which are involved. With the recognition that smoking is motivated, reinforced, and terminated for any one or more of an extensive list of reasons, we assume a realistic position which tempers but does not render hopeless the function of the health educator.

The role of research is clear; as each piece is added to the puzzle, the picture becomes less abstract and ill-defined. As a profile of the smoker emerges, we gain further insight into the means by which behavior can be affected and modified.

The purpose of this paper is to contribute to the general knowledge concerning differences between smokers and nonsmokers. In addition, suggested applications of these findings to teaching situations will be presented. No attempt has been made to cite the voluminous literature on the subject of smokers' personalities or anti-smoking education; however, references are included at the end of this paper to provide some indication of the scope and depth of such research.[1-8]

Method

The data for this report were obtained from a major epidemiologic study conducted in 1973 in the southeastern United States by Dr. Bell and his colleagues. A survey instrument composed of 403 questions was designed to elicit mental and physical health information as well as sociodemographic and service utilization data. The questionnaire required approximately 1½ hours to complete and was administered to 2029 randomly selected adult respondents.

Of specific interest to this presentation was the question concerning the smoking of tobacco. Although the survey instrument did not, unfortunately, distinguish between cigar, pipe, and cigarette smokers, we found it highly informative to compare, through computer analysis, the smoking rates of various sociodemographic groups. While the Bureau of the Census does gather data about smoking habits in the population, our study provides us with a unique opportunity to investigate prevalence rates according to race, sex, age, and so forth, in addition to respondents' scores on psychological scales, and many other variables.

Findings

In brief, this is what we learned. Significant differences were found in the percentage of males and females who smoke. This would be expected both from casual observation as well as the statistics gleaned from the 1974 Statistical Abstract of the United States which is based on a 1970 survey of 37,000 households.[9]

Fifty-two (52.6%) percent of the males in our study were smokers, while only twenty-eight percent (28.5%) of the females admitted smoking (see Table 1). This compares with forty-six (45.9%) and thirty percent (30.5%), respectively, in the census data. This, as well as other similarities in the two sets of data, lead us to believe our sample was as truly representative as a random sample would imply.

We observed virtually no differences in rates of smoking among blacks and whites. (Table 2)

Five designated age categories ranging from 16 to 60 and older showed statistically significant differences among the respondents. In particular, the highest percentage of smokers occurred in the 30-44 age category, while the youngest and eldest groups had the lowest percentages of respondents who smoked. (Table 3)

Unlike the reports of some smaller studies, our data did not support the observation that more smoking occurs

among members of the lower socioeconomic classes. On the contrary, we noted that the highest percentage of smokers in any of the five socioeconomic groups established for comparative purposes was 45.9% and occurred in the middle classification. (Table 4)

Respondents with at least some college or trade school education, or more, were less likely to be smokers (averaging about 31%). Those who were grouped as having "grade school," "some high school," or "high school graduation" levels of education all reported smoking rates of approximately 40%. (Table 5)

These facts, by themselves, can be of interest, but we were primarily concerned about the association of stress circumstances with the occurrence of smoking. We learned, for example, that persons with marital anomalies or disruptions such as commonlaw marriages, divorce, or separation, were significantly more likely to be smokers (50% or more in each group) than were those who described themselves as married, single, or widowed. (Table 6) The latter is probably explained by the fact that women are more likely to be widowed and older, and we have already established that females and the oldest age category account for smaller percentages of smokers.

Other questions which were asked in the study enabled us to discover that persons who rated their childhoods as

unhappy, and those who did not grow up with both real parents reported higher rates of smoking than did other respondents. (Tables 7, 8) Since the effects of trauma and early separation are commonly linked to subsequent anxiety and depression, these findings should be considered carefully.

In addition, those who had experienced larger numbers of stressful life events (see Appendix A for listing) were more likely to be smokers. (Table 9) This phenomenon occurred in the form of a positive linear relationship with the percentage of smokers going up as the number of SLEs increased.

Surprisingly, there were no observable differences between smokers and nonsmokers in their reports of job pressures.

On the other hand, an important finding from our analysis of data indicates that smokers consistently scored significantly higher than nonsmokers on the psychometric scales incorporated in the survey instrument. (Table 10. See Appendix B for description of scales.) These scales were designed to measure levels of anxiety and depression in the respondents, based on their report of key symptoms. It must be pointed out, however, that "significantly higher scores" do not necessarily represent impairment or "caseness" for all smokers, but we are

saying that, as a group, smokers had higher anxiety and depression scores than did nonsmokers and this finding was significant at the $p<.01$ level. These differences remained constant despite controls for race, sex, age, and SES.

Conclusions and Recommendations

In summary, we have reported significant differences in the rates of smoking based on several variables. Highest percentages of smokers were found among males, those aged 30-44, the lesser educated, the divorced or separated, the middle socioeconomic class, those experiencing larger numbers of stressful life events, those who did not grow up with both their real parents, and/or those who had unhappy childhoods.

Further, smokers as a group tended to score higher on psychological scales measuring anxiety and depressive symptomatology.

Smoking has been described as a psychosocial, not a medical problem, strongly linked to reference groups and situational social influences.[10, 11] It has also been suggested that "smoking is a compensatory form of behavior, a symptom of other problems of emotional health."[12]

Certainly, our data tend to provide correlational support for these theories. As stressful life events and anxiety or depression-producing social interactions occur,

we might expect smoking habits to be initiated or reinforced.

Recent biochemical research hints that it may be possible to identify individuals who are biologically cancer-prone; such a breakthrough would be revolutionary since our educational efforts could be directed toward specific target groups who will almost certainly suffer the most debilitating consequences of smoking if they acquire the habit. Until--and if--that happens, it is suggested from what we already know about educational strategies that intervention must be persistent, individualized, and socially reinforced. If, as our research indicates, smokers are more symptomatic on scales which measure psychological well-being, and therefore less successful "copers" than are nonsmokers, perhaps we should concentrate our attention on teaching problem-solving techniques to youth and adults who will otherwise seek alternatives which are potentially harmful to their health. We have nothing to lose by such an approach, and we stand to gain an increasing number of successfully coping, socially-conscious members of our society.

TABLE 1

PREVALENCE OF SMOKERS, BY SEX

	Smokers		Nonsmokers	
	N	%	N	%
Males (N=852)	448	(52.6)	404	(47.4)
Females (N=1174)	335	(28.5)	839	(71.5)

*Corrected Chi square 119.39, 1 df, p<.001

TABLE 2

PREVALENCE OF SMOKERS, BY RACE

	Smokers		Nonsmokers	
	N	%	N	%
White (N=1754)	679	(38.7)	1075	(61.3)
Black (N=260)	99	(38.1)	161	(61.9)

*NS

TABLE 3

PREVALENCE OF SMOKERS, BY AGE

	Smokers		Nonsmokers	
	N	%	N	%
16-22 (N=204)	75	(36.8)	129	(63.2)
23-29 (N=245)	113	(46.1)	132	(53.9)
30-44 (N=444)	217	(48.9)	227	(51.1)
45-59 (N=461)	211	(45.8)	250	(54.2)
60+ (N=668)	165	(24.7)	503	(75.3)

*Chi square 90.34, 4 df, p<.001

TABLE 4

PREVALENCE OF SMOKERS, BY SOCIOECONOMIC STATUS

	Smokers		Nonsmokers	
	N	%	N	%
Highest (N=225)	77	(34.2)	148	(65.8)
Fourth (N=469)	176	(37.5)	293	(62.5)
Third (N=582)	267	(45.9)	315	(54.1)
Second (N=433)	159	(36.7)	274	(63.3)
Lowest (N=317)	104	(32.8)	213	(67.2)

*Chi square 20.17, 4 df, p<.001

TABLE 5

PREVALENCE OF SMOKERS, BY EDUCATION

	Smokers		Nonsmokers	
	N	%	N	%
Grade School (N=526)	212	(40.3)	314	(59.7)
Some High School (N=422)	172	(40.8)	250	(59.2)
HS Graduate (N=587)	246	(41.9)	341	(58.1)
Some College or Trade School (N=302)	96	(31.8)	206	(68.2)
College Graduate or More (N=158)	48	(30.4)	110	(69.6)

*Chi square 14.54, 4 df, p<.005

TABLE 6

PREVALENCE OF SMOKERS, BY MARITAL STATUS

	Smokers		Nonsmokers	
	N	%	N	%
Common law (N=8)	5	(62.5)	3	(37.5)
Divorced (N=110)	56	(50.9)	54	(49.1)
Separated (N=50)	25	(50.0)	25	(50.0)
Married (N=1382)	565	(40.9)	817	(59.1)
Single (N=198)	77	(38.9)	121	(61.1)
Widowed (N=278)	55	(19.8)	223	(80.2)

*Chi square, 56.25, 5 df, p<.001

TABLE 7

PREVALENCE OF SMOKERS, BY SELF-RATED CHILDHOOD HAPPINESS

	Smokers		Nonsmokers	
	N	%	N	%
Mostly Happy (N=1651)	610	(36.9)	1041	(63.1)
Mixed (N=273)	131	(48.0)	142	(52.0)
Mostly Unhappy (N=97)	41	(42.3)	56	(57.7)

*Chi square 12.58, 2 df, p<.01

TABLE 8

PREVALENCE OF SMOKERS, BY SELF-REPORT OF GROWING UP WITH BOTH REAL PARENTS

	Smokers		Nonsmokers	
	N	%	N	%
Yes (N=1455)	539	(37.0)	916	(63.0)
No (N=570)	244	(42.8)	326	(57.2)

*Corrected Chi square 5.49, 1 df, p<.01

TABLE 9

PREVALENCE OF SMOKERS, BY NUMBER OF STRESSFUL LIFE EVENTS EXPERIENCED

(Number of Events)	Smokers		Nonsmokers	
	N	%	N	%
None (N=35)	9	(25.7)	26	(74.3)
1-3 (N=607)	200	(32.9)	407	(67.1)
4-6 (N=809)	315	(38.9)	494	(61.1)
7-9 (N=414)	179	(43.2)	235	(56.8)
10-12 (N=118)	56	(47.5)	62	(52.5)

*Chi square 18.3, 4 df, p<.001

TABLE 10

PSYCHOLOGICAL SCALE SCORES OF SMOKERS AND NONSMOKERS

	HOS		MOOD		DEPRESSION		GENERAL PSYCHO-PATHOLOGY		ANXIETY-SYMPTOM		ANXIETY-FUNCTION	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
SMOKERS N=783	28.2	5.9	7.1	5.6	13.9	10.1	4.9	3.9	6.6	7.6	2.2	5.0
NONSMOKERS N=1243	25.8	5.1	6.0	4.9	12.1	8.7	4.0	3.3	5.4	6.5	1.2	3.2
Significance	t = 9.49		t = 4.54		t = 4.28		t = 5.91		t = 3.78		t = 5.36	
	p<.001		p<.001		p<.001		p<.001		p<.001		p<.001	

APPENDIX A

Stressful Life Events Inventory

For the purposes of this major survey, a "stressful life events inventory" was developed based on the work of Paykel et al.* who attempted to replicate and extend the work of Holmes and Rahe. From that list of 61 scaled life events, we selected the first 30 events (see list below) which were judged in his work to be the most upsetting to patient and non-patient populations.

Death of a child
Death of spouse
Jail sentence
Death of close family member (parent, sibling)
Spouse unfaithful
Major financial difficulties (very heavy debts, bankruptcy)
Business failure
Fired
Miscarriage or stillbirth
Divorce
Marital separation due to argument
Court appearance for serious legal violation
Unwanted pregnancy
Hospitalization of family member (serious illness)
Unemployed for one month
Death of close friend
Demotion
Major personal physical illness (hospitalization or one month off work)
Begin extramarital affair
Loss of personally valuable object
Law suit
Academic failure (important exam or course)
Child married against respondent's wishes
Break engagement
Increased arguments with spouse
Increased arguments with resident family member
Increased arguments with fiance or steady date
Take a large loan (more than one-half of a year's earnings)
Son drafted
Arguments with boss or co-worker

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*Paykel, E.S., B.A. Prusoff and E.H. Uhlenhuth. 1971 "Scaling of Life Events," Archives of General Psychiatry 25:340-347.

APPENDIX B

PSYCHIATRIC SCALES

Health Opinion Survey

This instrument, composed of 20 items, was developed by MacMillan[13] in 1957 for use in the Stirling County study, the results of which were reported by Leighton et al.[14] It was designed to measure psychological disorder in persons who, if thoroughly studied by psychiatrists, would be diagnosed as suffering from one or more conditions described in the DSM-I. The possible range on the scale is 20 to 60. The mean score for the entire sample (2029) was 26.7 (S.D. 5.6).

Other scales:

Based on the earlier work of Drs. Schwab and Warheit who conducted a similar survey of 1645 respondents in the southeastern United States, scale items designed to measure psychiatric symptomatology were incorporated in this survey instrument. Ninety-eight (98) questions measuring symptoms and levels of functioning were factor analyzed, isolated into subscales, analyzed by subset, formed into subscales, and tested among subpopulations to detect differences within and between such groups.

MOOD

This scale was composed of 9 items measuring a mood component of depression. The possible range of scores was from 0 to 36, with the mean score for all 2029 respondents being 6.4 (S.D. 5.3).

DEPRESSION

Eighteen (18) questions were used on the depression scale; possible range of scores was 0 to 72 with a mean of 12.8 and a standard deviation of 9.3.

GENERAL PSYCHOPATHOLOGY

This scale included questions such as "In the last year, how often did you have unwelcome or strange thoughts or thoughts that frightened you?" and " . . . how often did you think people were following you or plotting against you?" etc. With a possible range of 0 to 32, the overall mean was 4.4 (S.D. 3.6).

ANXIETY-SYMPTOM

Questions on this scale were designed to elicit reports of symptoms of anxiety. The 12 items asked about "hands trembling," "cold sweats," "heart beating hard,", "weakness," "dizziness," etc. Range, 0 to 48; mean, 5.8; S.D.,6.9.

ANXIETY-FUNCTION

The 11 items on this scale attempted to measure the degree to which a person's anxieties affected his/her behavior and social interractions. For example, we asked "During the last year, were you unable to do your usual work because of worry or nervousness?" and " . . . how often did you feel that you might have a nervous breakdown or that you might lose your mind?" and " . . . have you ever had to stay at home or in bed because of this feeling?" With a possible range of 0 to 44, the population (2029) mean was 1.5 with a standard deviation of 4.0.

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